

storing the recording data in the memory of said printer unit;
supplying the recording data to said printing unit in synchronization with printing pulses provided at predetermined printing intervals; and
printing the recording data with said printer unit.

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46. (Amended) A method for driving a facsimile machine including a printer unit for printing out data having a predetermined format, said printer unit including a font memory, comprising the steps of:

converting facsimile image data into recording data having a format in which said printer unit can receive the recording data;

supplying the recording data to said printing unit in synchronization with printing pulses provided at predetermined printing intervals; and

printing the recording data with said printer unit including said font memory.--

REMARKS

Favorable reconsideration of this application, in view of the following comments and as presently amended, is respectfully requested.

Claims 1-46 are pending in this application. Claims 1, 2, 11, 12, 21-23, 25-28, 30-33, 42, 43, 45, and 46 were rejected under 35 U.S.C. §103(a) as unpatentable over Yukino, U.S. patent 5,268,770. Claims 6, 16, and 37 were rejected under 35 U.S.C. §103(a) as unpatentable over Yukino in view of Ohmura et al, U.S. patent 5,815,280. Claims 24, 29, and 44 were rejected under 35 U.S.C. §103(a) as unpatentable over Yukino in view of Nakagawa, U.S. patent 5,819,009. Claims 3-5, 7-10, 13-15, 17-20, 34-36, and 38-41 were objected to as dependent upon rejected base claims, but were noted as allowable if rewritten

in independent form to include all of the limitations of their base claims and any intervening claims. That indication of the allowable subject matter is hereby gratefully acknowledged.

Addressing now the rejection of Claims 1, 2, 11, 12, 21-23, 25-28, 30-33, 42, 43, 45, and 46 under 35 U.S.C. §103(a) as unpatentable over Yukino, it is respectfully submitted that those claims patentably define over the teachings in Yukino.

It is initially noted that each of the independent claims has been amended by the present response to clarify a feature in the present invention. More specifically, each of the independent claims clarifies that the recording data is supplied from the interface to the printing portion "in synchronization with printing pulses provided at predetermined printing intervals".

As shown in Figure 2 of the present specification, a printer receives data from a PC via connecting ports, and that data is provided to a recording controller 20 or an input data buffer 21. The data received from the PC includes codes such as ASCII codes in which a letter "A" is represented by a particular code, a letter "B" is represented by another particular code, etc. When a character string such as "ABCD" is to be printed, a 4-byte data is supplied to the printer, as one example, and the printer forms image data to be printed by using font data stored therein. Such an operation mode can print characters at high speed.

The printer device of the present invention, however, is designed to print images in addition to text. When images, such as photograph images or table-chart images, are to be printed, data of pixel-by-pixel representations of the images may be supplied to the printer rather than supplying character codes, such as ASCII codes.

Attention is now directed to the attached Appendix which shows Figures A-D which will help to further explain the operation of the present invention.

As shown in Figure A of the attached Appendix, when a string "ABC" is supplied to a printer as image data rather than as ASCII code data, a main scan direction of a data transfer is in the vertical direction of Figure A. In such an operation mode, the printer must rearrange image data within the printer prior to that image data being printed. As a result, the printing process is relatively slow. That is the reason why printing is typically slow when table-charts, photograph images, etc. are to be printed.

In contrast to such an operation of printing image data, a facsimile image is supplied in a data-transfer format which has a main scanning direction extending horizontally, such as shown in Figure B of the attached Appendix. In that operation lines are successfully printed from the top to the bottom.

In conventional operations as discussed above, if a conventional printer is used to print a facsimile image, it may take five to ten minutes to print one page, when the same printer will be able to print 4 to 10 pages of characters per minute. As a result, a conventional printer is typically not suitable for printing images.

The present invention is directed to a system for a printer device which can print a facsimile image at high speed.

The present invention achieves such an operation by controlling a printer to print a facsimile image by utilizing font codes, i.e., such as ASCII codes. Such an operation is achieved in the present invention by supplying all-black-character data at data positions where facsimile data is supplied. With reference now to Figure C of the attached Appendix, all-black-character data has all of the dots thereof black. As shown in the example of Figure C, assume that the all black character data is FF. Then, a data stream of 0 0 0 FF FF FF FF 0 0 0 can be supplied to a start printing operation to achieve the printout

shown in Figure C of the attached Appendix. In that Figure C boxes representing data are shown with spaces therebetween, but such spaces are nonexistent in reality; the spaces are provided to more clearly show the different characters. In Figure C of the attached Appendix, the fourth through seventh characters are all-black-characters, and as a result, print pulses are generated at those positions.

However, a facsimile machine will not know when the print pulses are generated because a facsimile machine does not have information about when a printer receives the print pulses for the purpose of printing data. To address such a problem, in the present invention, print pulses are supplied to a facsimile machine so as to read a facsimile image from the facsimile machine in synchronism with the print pulses.

Such subject matter has now been clarified in the pending claims which recite that the recording data is supplied from the interface to the printing portion "in synchronization with printing pulses provided at predetermined printing intervals".

A facsimile image read in synchronization with print pulses can be combined by, as one example, by AND gates with the all-black pulses corresponding to the all-black-character data. Such an operation substitutes the facsimile image data for the all-black characters. As a result, a facsimile image is printed at positions where the all-black-characters are supplied.

As one concrete example, assume that one wishes to print the character data "ABCD". In that instance, if that character data is combined with the print pulses of Figure C of the attached Appendix, the resulting image printed is data shown in Figure D of the attached Appendix. As shown in Figure D, the desired "ABCD" data can be printed at the positions where the print pulses were generated. This results because in the present invention the

recording data is supplied to the printing portion "in synchronization with printing pulses provided at predetermined printing intervals".

In such a manner, the printer can utilize font codes which provides for enhanced printing operations.

It is also noted that an AND operation can also be easily performed by changing a direction in which data is read from a memory of the facsimile machine. Mutually complementary operations between a printer and a facsimile can achieve high speed printing of a facsimile image such as at a rate of 4 to 10 pages per minute with such an operation in the present invention.

As noted above, the pending claims have been amended by the present response to clarify features in the present invention. Moreover, no teachings in Yukino can meet such limitations in the pending claims.

Yukino is directed to a system and method for a facsimile transmission. However, Yukino differs from the present invention in that Yukino does not disclose or suggest that recording data is provided in synchronization with printing pulses at predetermined printing intervals. Yukino is directed to transmission data to be transmitted to a destination facsimile machine, but does not address supplying recording data from an interface to a printing portion, and particularly "in synchronization with printing pulses provided at predetermined printing intervals".

The basis for the outstanding rejection appears to rely on the teachings in Yukino et al of printing different lines at different timings. However, such an operation in Yukino et al is not an operation of supplying recording data "in synchronization with printing pulses provided at predetermined printing intervals".

In such ways, the present invention as recited in each of the pending claims is believed to patentably distinguish over the teachings in Yukino.

Addressing now each of the further rejections based on the further teachings to Ohmura et al and Nakagawa, it is respectfully submitted that no teachings in Ohmura et al or Nakagawa can overcome the deficiencies in Yukino, and that thus the pending claims also patentably defines over those further grounds for rejections.

In summary, each of the pending claims patentably defines over the applied art.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully requested that this case be passed to issue.

Respectfully submitted,

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